

REAGAN 2005-00000000

WHAT IS CLAIMED IS:

1. A method of manufacturing a medical stent having a valve, comprising:
providing a generally tubular body formed of braided wires and having a proximal end portion and a distal end portion;
extending the braided wires near the distal end portion; and
deforming the extended wires to form the valve,
wherein the valve is configured to be normally closed and to be open in response to a predetermined condition.
2. The method of manufacturing the medical stent according to claim 1, wherein the valve is basket-shaped.
3. The method of manufacturing the medical stent according to claim 1, further comprising a step of providing a covering to at least a portion of the tubular body.
4. The method of manufacturing the medical stent according to claim 3, wherein the material for the covering is selected from a group of polyurethane, polytetrafluoroethylene, and silicone.
5. The method of manufacturing the medical stent according to claim 1, further comprising a step of providing a covering to at least a portion of the valve.
6. The method of manufacturing the medical stent according to claim 5, wherein the material for the covering is selected from a group of polyurethane, polytetrafluoroethylene, and silicone.

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7. The method of manufacturing the medical stent according to claim 1, wherein deforming the extended wires is performed by curling the extended wires inwards.
 8. The method of manufacturing the medical stent according to claim 1, wherein deforming the extended wires is performed by straightening the extended wires and bending the extended wires inwards at a predetermined location of the extended wires.
 9. The method of manufacturing the medical stent according to claim 1, wherein deforming the extended wires is performed by curling the extended wires so that middle portions of the extended wires converge toward each other.
 10. The method of manufacturing the medical stent according to claim 1, wherein the predetermined condition is a predetermined pressure difference between an upstream and a downstream of the valve.
 11. The method of manufacturing the medical stent according to claim 1, wherein the valve is configured to function as a one-way valve.
 12. A method of manufacturing a medical stent having an elastomeric valve, comprising:
 - providing a generally tubular body;
 - positioning a fixture proximate to a portion of the tubular body;
 - applying an elastomeric material onto the fixture; and
 - removing the fixture to form the elastomeric valve,wherein the elastomeric valve is configured to be normally closed and to be open in response to a predetermined condition.

13. The method of manufacturing the medical stent according to claim 12, wherein the elastomeric valve is basket-shaped.
14. The method of manufacturing the medical stent according to claim 12, further comprising a step of curing the applied elastomeric material.
15. The method of manufacturing the medical stent according to claim 12, further comprising a step of providing a covering to at least a portion of the tubular body.
16. The method of manufacturing the medical stent according to claim 15, wherein the step of providing the covering is performed simultaneously with the step of applying the elastomeric material.
17. The method of manufacturing the medical stent according to claim 15, wherein a material for the covering and the elastomeric material are the same.
18. The method of manufacturing the medical stent according to claim 12, wherein the elastomeric material is selected from a group of polyurethane, polytetrafluoroethylene, and silicone.
19. The method of manufacturing the medical stent according to claim 12, wherein the predetermined condition is a predetermined pressure difference between an upstream and a downstream of the elastomeric valve.
20. The method of manufacturing the medical stent according to claim 12, wherein the elastomeric valve is configured to function as a one-way valve.
21. The method of manufacturing the medical stent according to claim 12, wherein the fixture is attached to a distal end portion of the tubular body.

22. The method of manufacturing the medical stent according to claim 12, wherein the elastomeric valve is formed so that the valve has an opening in the normally closed state.
23. The method of manufacturing the medical stent according to claim 22, the opening includes at least one slit.
24. A method of manufacturing a medical stent having a valve, comprising:
 - providing a generally tubular body; and
 - attaching an elastomeric gasket valve integral to a portion of the tubular body;
 - wherein the gasket valve is configured to be normally closed and to be open in response to a predetermined condition.
25. The method of manufacturing the medical stent according to claim 24, wherein the valve is attached to a distal end portion of the tubular body.
26. The method of manufacturing the medical stent according to claim 24, wherein the elastomeric gasket valve is attached to the portion of the tubular body by adhesives.
27. The method of manufacturing the medical stent according to claim 24, wherein the elastomeric gasket valve is sewed to the portion of the tubular body.
28. The method of manufacturing the medical stent according to claim 24, wherein the elastomeric gasket valve is injection-molded to the portion of the tubular body.
29. The method of manufacturing the medical stent according to claim 24, wherein the predetermined condition is a predetermined pressure difference between an upstream and a downstream of the valve.

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30. The method of manufacturing the medical stent according to claim 24, wherein the valve is configured to function as a one-way valve.
31. A medical stent having a valve, comprising:
 - a generally tubular body formed of braided wires and having a proximal end portion and a distal end portion; and
 - a normally closed valve formed from the braided wires extended from the distal end portion, wherein the valve is configured to open in response to a predetermined condition.
32. The medical stent according to claim 31, wherein the valve is a basket-shaped spring valve.
33. The medical stent according to claim 31, wherein at least a portion of the tubular body is provided with a covering.
34. The medical stent according to claim 33, wherein the material for the covering is selected from a group of polyurethane, polytetrafluoroethylene, and silicone.
35. The medical stent according to claim 31, wherein at least a portion of the valve is provided with a covering.
36. The medical stent according to claim 35, wherein the material for the covering is selected from a group of polyurethane, polytetrafluoroethylene, and silicone.
37. The medical stent according to claim 31, wherein the predetermined condition is a predetermined pressure difference between an upstream and a downstream of the valve.

38. The medical stent according to claim 31, wherein the valve is a one-way valve.
39. The medical stent according to claim 31, wherein the extended wires forming the valve are curled inwards.
40. The medical stent according to claim 31, wherein the extended wires forming the valve are straightened and bent inwards at a predetermined location of the extended wires.
41. The medical stent according to claim 31, wherein the extended wires forming the valve are curled so that middle portions of the extended wires converge toward each other.
42. A medical stent having an elastomeric valve, comprising:
 - a generally tubular body having a proximal end portion and a distal end portion; and
 - a normally closed valve made of an elastomeric material and formed integral to the distal end portion of the tubular body, wherein the elastomeric valve is configured to open in response to a predetermined condition.
43. The medical stent according to claim 42, wherein the elastomeric valve is basket-shaped.
44. The medical stent according to claim 42, wherein the elastomeric valve is a gasket valve.
45. The medical stent according to claim 42, wherein at least a portion of the tubular body is provided with a covering.

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46. The medical stent according to claim 45, wherein the material for the covering is selected from a group of polyurethane, polytetrafluoroethylene, and silicone.
47. The medical stent according to claim 42, wherein at least a portion of the elastomeric valve is provided with a covering.
48. The medical stent according to claim 47, wherein the material for the covering is selected from a group of polyurethane, polytetrafluoroethylene, and silicone.
49. The medical stent according to claim 48, wherein at least a portion of the tubular body is provided with a covering and a material for the covering in the tubular body is the same as the material for the covering in the elastomeric valve.
50. The medical stent according to claim 42, wherein the predetermined condition is a predetermined pressure difference between an upstream and a downstream of the elastomeric valve.
51. The medical stent according to claim 42, wherein the elastomeric valve is a one-way valve.
52. The medical stent according to claim 42, wherein the elastomeric valve includes an opening when the valve is in the normally closed position.
53. The medical stent according to claim 52, wherein the opening includes at least one slit.